REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 18 through 68 remain in this case. Amendment to claim 63 is presented. Claims 1 through 17 were previously canceled.

Claims 18 through 62 stand allowed.

Claims 63 through 67 were finally rejected under §103 as unpatentable over the Jasper et al. reference[1] in view of the Bingham reference[2]. Relative to claim 63, the Examiner found that the Jasper et al. reference taught all of the steps and limitations of claim 63, except for the particular weighted synchronizing pattern recited in the claim. Specifically, the Examiner asserted that the Jasper et al. reference does not disclose "a weighted synchronizing pattern corresponding to a set of j values chosen from a sequence of N values, and the equations that determine the N values".[3] The Examiner asserted that the Bingham reference teaches "specified equations that define the weighted synchronization pattern",[4] and found that it would have been obvious to use the synchronizing pattern of the Bingham reference in the method disclosed by the Jasper et al. reference to meet the standard described by the Bingham reference.

Claim 68 was finally rejected under §103 as unpatentable over the Jasper and Bingham references, and further in view of the Hunt et al. reference[5], on similar grounds as previously asserted.[6]

Amendment to independent claim 63 is presented to clarify its patentability over the applied references. Specifically, the correlating step is amended to clarify the manner in which

---

[1] U.S. Patent No. 5,343,499, issued August 30, 1994 to Jasper et al., from an application filed January 9, 1992.
[2] Bingham., *Proposed Standard: Sections 6.6-6.10 & 7.6 – 7.10: Encoders, Modulators, Cyclic Prefices, DACs, and Anti-Aliasing Filters*, Submission T1E1.4/93-120 to the T1E1.4 Working Group of Committee T1.
[3] Office Action of October 17, 2008, page 4.
[4] *Id.*
[5] U.S. Patent No. 5,400,322, issued March 21, 1995.
[6] Office Action, *supra,* pages 5 and 6.

the correlations are weighted, by now reciting that the complex amplitudes to which the received values of the synchronizing frame correspond are correlated with weighted complex amplitudes derived from complex amplitudes corresponding to stored values of the synchronizing pattern, weighted by a weighting coefficient for each of the plurality of tones. This proposed amendment to claim 63 is clearly supported by the specification,[7] and as such no new matter is presented.

The Examiner asserted that Applicants' previous arguments were not persuasive.[8] More specifically, the Examiner asserted that the Bingham reference discloses the weighting of the synchronization pattern for each tone, and that the weighted pattern used in the transmitter is inherently used in the receiver because the receiver needs to know the weighted synchronization in order to maintain synchronization.[9]

Applicants maintain their traverse of the §103 rejection of claims 63 through 68, on the grounds that the Examiner has failed to make a *prima facie* case of obviousness against claim 63. Specifically, Applicants submit that the Examiner has erroneously asserted that each element of independent claim 63 can be found in the applied prior art references. Applicants further submit that the combined teachings of the applied references in fact fall short of the requirements of the claims.

Applicants also submit that this traverse of the §103 rejection will be further apparent upon entry of the amendment to independent claim 63. It appears from the final rejection that the Examiner has confused the weighting coefficients assigned to each of the plurality of tones, on one hand, with the data values defining the complex amplitudes (*e.g.,* QAM values) transmitted on each tone. The "equations that define the N values" taught by the Bingham reference define the data points that are modulated onto the various subcarriers – in other words, these equations define the data values transmitted in the synchronization frame.[10] The specification of this application itself distinguishes this data pattern defining the synchronization

---

[7] *See* specification of S.N. 10/757,195, paragraphs [0033] and [0040] through [0042].
[8] Office Action, *supra,* pages 6 and 7.
[9] *Id.,* at page 7.
[10] Bingham, *supra,* §6.7.4 ("The *data pattern* used in the synchronization symbol is a maximum length sequence of length 511, generated by . . . . "; *emphasis added*).

symbol from the weighting coefficients applied to the correlating for each of the tones performed at the receiver.[11] This distinction[12] is further clarified in proposed amended claim 63, which now specifies that the weighted complex amplitudes are derived from complex amplitudes corresponding to the stored values of the synchronizing pattern assigned to each of the plurality of tones, weighted by the weighting coefficient for each of the plurality of tones. As evident from this claim language, the synchronization pattern defines the complex amplitude for a given tone, and the weighting coefficient is applied to that complex amplitude; conversely, the synchronization pattern does not define the weighting coefficient for a tone.

Applicants submit and maintain, therefore, that the Bingham reference does not teach the correlating of complex amplitudes of received synchronizing frame values with stored values of the synchronizing pattern, in a manner that is weighted by a weighting coefficient for each of the plurality of tones. Rather, the Bingham reference only discloses the equations that define the synchronization pattern. Therefore, because the weighting coefficients required in the correlating step of claim 63 are not disclosed by the Bingham reference, nor by the Jasper reference, the combined teachings of the applied references fall short of the requirements of amended claim 63 and its dependent claims.

Furthermore, Applicants submit that there is no suggestion or motivation from the applied references to modify these teachings in such a manner as to reach amended claim 63. The Jasper et al. reference mentions no weighting whatsoever. Nor does the Bingham reference suggest the use of weighting coefficients in the correlating performed upon receipt of a synchronization frame. The cited passage of the Bingham reference reads:

> These bits are used as follows: the first bit of a set of 512 is used for the carrier at d.c. (the power assigned to this carrier is, of course, zero, so the bit is effectively ignored); . . . Bits 128 and 129, which modulated the pilot carrier, are also

---

[11] *See* specification, *supra,* paragraph [0033] (the data pattern being defined as "a binary pseudo-random sequence of length 512 [] produced by the source 24 in accordance with the equations"); paragraphs [0040] through [0042] (describing the weighting factors).

[12] While present in claim 63 prior to the proposed amendment.

> effectively discarded because the phase of the pilot is determined by its own random pattern . . . .[13]

There is no mention in this passage, or elsewhere in the Bingham reference, of any action that is or ought to be taken at the receiver end of this synchronization symbol in carrying out its correlation with the known values. Rather, the passage reads from the viewpoint of the transmitter.[14]

The Examiner asserted that any weighting of the synchronization pattern performed at the transmitter, as taught by the Bingham reference, must necessarily be performed at the receiver and that therefore these actions would be inherent. This is not the case. As evident from the specification of this application, the correlating step of proposed amended claim 63 and its weighting factors have nothing to do with how the signals are transmitted – rather, the weighting of the correlation can follow various alternatives (binary weighting, weighting according to SNR, etc.), each and every one of which is transparent to the transmitter. The weighting performed by the receiver in its correlating is rather intended to assist the synchronization by reducing the impact of noisier channels on the correlation result; this avoids the possibility that noisy channels (and thus poor correlation) can erroneously "detect" loss of frame synchronization even though frame synchronization has not been lost.[15]

For these reasons, Applicants submit that nothing in either of the Jasper et al. or Bingham references[16] provides any teaching, suggestion, or motivation to modify their combined teachings so as to reach proposed amended claim 63, and that no reasoned basis has been presented to indicate that such modification would be within the ordinary creativity of the skilled person.

Applicants therefore submit that, upon entry of this amendment to claim 63, all of claims 63 through 68 would be patentably distinct over the applied references. Entry of this amendment would therefore place all claims in this case in condition for allowance, for the reasons stated

---

[13] Bingham, *supra,* §6.7.4.
[14] *Id.* ("it can be used to synchronize the symbol boundaries of a DMT modulator . . . "; "the power assigned to this carrier is, of course, zero, . . . "; and "the last bit, which could be used to modulate carrier #256, is discarded. Bits 128 and 129, which modulate the pilot carrier, are also effectively discarded . . . ").
[15] Specification, *supra,* paragraph [0038].
[16] Nor in the other prior art of record.

above. Alternatively, Applicants submit that entry of this amendment will place the rejected claims in this case in better condition.

Entry of this amendment in, and favorable reconsideration of, this application are therefore respectfully requested.

Respectfully submitted,
/Rodney M. Anderson/
Rodney M. Anderson
Registry No. 31,939
Attorney for Applicants

Anderson, Levine & Lintel, L.L.P.
14785 Preston Road, Suite 650
Dallas, Texas 75254
(972) 664-9554